

**CLAIMS**

1. A method for extracting multiple submunitions from a delivery vehicle, comprising the steps of:
  - (a) entering a target acquisition area;
  - 5 (b) initiating at least one extraction motor of at least one submunition;
  - (c) extracting at least one submunition from the delivery vehicle with the at least one extraction motor;
  - (d) initiating a submunition sensor subsystem of the at least one submunition;
  - (e) acquiring a target with the at least one submunition sensor subsystem; and
  - 10 (f) fuzing a weapon on board the at least one submunition in response to the submunition sensor subsystem.
2. The method as claimed in claim 1, further comprising spinning the submunition after the step of extracting the submunition from the delivery vehicle.
- 15 3. The method as claimed in claim 1, further comprising deploying an orientation and stabilization system of the submunition after the step of extracting the submunition from the delivery vehicle.
- 20 4. The method as claimed in claim 3, further comprising spinning the submunition to deploy the orientation and stabilization system.
5. The method as claimed in claim 4, wherein the orientation and stabilization system is a samara wing blade.
- 25 6. The method as claimed in claim 3, wherein the step of deploying the orientation and stabilization system occurs a specified amount of time after the step of extracting the submunition from the delivery vehicle.

7. The method as claimed in claim 6, further comprising before the step of extracting the submunition from the delivery vehicle, communicating from the delivery vehicle to the submunition a time to deploying the orientation and stabilization system.

5 8. The method as claimed in claim 1, further comprising communicating specific target information from the delivery vehicle to the submunition before the step of extracting the submunition from the delivery vehicle.

9. The method as claimed in claim 1, further comprising the delivery vehicle selecting a  
10 target for the submunition.

10. The method as claimed in claim 9, further comprising selecting a location and direction of submunition extraction based on target selection.

15 11. The method as claimed in claim 1, further comprising removing a cover of the delivery vehicle to expose the at least one submunition for the step of extracting.

12. The method as claimed in claim 11, wherein the cover of the delivery vehicle is removed with a flexible linear shaped charge.

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13. The method as claimed in claim 1, wherein the step of extracting is repeated for each submunition in order from the back of the delivery vehicle to the front of the delivery vehicle.

25 14. The method as claimed in claim 1, wherein the step of extracting extracts at least one submunition at approximately a 45 degree throw angle.

15. The method as claimed in claim 1, further comprising forming a through-port in the delivery vehicle.

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16. The method as claimed in claim 15, further comprising forming an extraction plume of the at least one extraction motor through the at least one through-port.

17. The method as claimed in claim 1, wherein the step of extracting does not  
5 substantially perturb a flight path of the delivery vehicle.

18. A method for extracting multiple submunitions from a delivery vehicle, comprising the steps of:

- (a) entering a target acquisition area;
- 10 (b) forming at least one through-port in the delivery vehicle;
- (c) initiating at least one extraction motor of at least one submunition;
- (d) forming an extraction plume from the at least one extraction motor through the at least one through-port; and
- (e) extracting at least one submunition from the delivery vehicle.

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19. The method as claimed in claim 18, further comprising initiating a submunition sensor subsystem of the at least one submunition.

20. The method as claimed in claim 19, further comprising acquiring a target with the at  
20 least one submunition sensor subsystem.

21. The method as claimed in claim 20, further comprising fuzing a weapon on board the at least one submunition in response to the submunition sensor subsystem.

22. A method for extracting multiple submunitions from a delivery vehicle, comprising the steps of:

- (a) entering a target acquisition area;
- (b) initiating at least one extraction motor of at least one submunition;
- (c) extracting at least one submunition from the delivery vehicle;

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- (d) after the step of extracting, initiating a spin-motor of the at least one submunition; and
- (e) spinning the at least one submunition.

5     23.     The method as claimed in claim 22, further comprising deploying an orientation and stabilization system of the submunition after the step of spinning the submunition.

24.     The method as claimed in claim 23, wherein the step of spinning the submunition spins the submunition to at least 20 hertz.

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25.     The method as claimed in claim 24, wherein the orientation and stabilization system is a samara wing blade.

15     26.     The method as claimed in claim 22, wherein the step of spinning is a second stage of the at least one extraction motor of the submunition.

27.     A method for ejecting multiple submunitions from a delivery vehicle, comprising the steps of:

- (a) entering a target acquisition area;
- 20     (b) forming at least one through-port in the delivery vehicle;
- (c) initiating at least one extraction motor of at least one submunition;
- (d) forming an extraction plume from the at least one extraction motor through the at least one through-port;
- (e) extracting at least one submunition from the delivery vehicle;
- 25     (f) after the step of extracting, initiating a spin-motor of the at least one submunition;
- (g) spinning the at least one submunition;
- (h) initiating a submunition sensor subsystem of the at least one submunition;
- (i) acquiring a target with the at least one submunition sensor subsystem; and

- (j) fuzing a weapon on board the at least one submunition in response to the submunition sensor subsystem.

28. A munition system comprising:

- 5 (a) a delivery vehicle having a main body portion; and
- (b) at least two submunitions mounted within the main body portion, wherein each submunition has at least one extraction motor having at least one ejection port aligned with at least one flow through-port of the main body portion.

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29. The munition system as claimed in claim 28, wherein at least one submunition includes an orientation and stabilization system.

30. The munition system as claimed in claim 29, wherein the orientation and  
15 stabilization system is a samara wing blade.

31. The munition system as claimed in claim 29, wherein each submunition further comprises a timer mechanism constructed and designed to be initiated at extraction of the submunition from the delivery vehicle.

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32. The munition system as claimed in claim 31, wherein the submunition further comprises a submunition processor subsystem, the submunition processor subsystem communicating with the timer mechanism and initiating deployment of the orientation and stabilization system at a determined time from extraction.

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33. The munition system as claimed in claim 32, wherein the delivery vehicle includes a delivery vehicle processor subsystem to determine the time to initiate deployment of the orientation and stabilization system and to communicate the determined time to the submunition processor subsystem.

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34. The munition system as claimed in claim 28, wherein each submunition further comprises a spin-up system.

5 35. The munition system as claimed in claim 34, wherein the spin-up system is a second stage of the at least one extraction motor.

36. The munition system as claimed in claim 34, wherein the spin-up system includes at least two spin ports.

10 37. The munition system as claimed in claim 36, wherein the spin ports are diametrically opposed and aligned through a center of gravity of the submunition.

38. The munition system as claimed in claim 34, wherein the spin-up system is constructed and designed to spin-up the submunition to at least 20 hertz.

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39. The munition system as claimed in claim 28, wherein the at least one ejection port is constructed and arranged to form a thrust vector through a center of gravity of the submunition.

20 40. The munition system as claimed in claim 28, wherein the extraction motor of each submunition includes at least three ejection ports and at least one ejection port is aligned with at least one through-port of the main body portion.

25 41. The munition system as claimed in claim 40, wherein at least one through-port is an opening in the main body portion for extraction of the submunitions.

42. The munition system as claimed in claim 40, wherein the main body portion includes at least three through-ports.

43. The munition system as claimed in claim 40, wherein the ejection ports are constructed and arranged to extract the submunition to the left, right and upward of the delivery vehicle.

5 44. The munition system as claimed in claim 43, wherein the at least three ejection ports include a first ejection port constructed and arranged to thrust approximately vertically and downward of the delivery vehicle, a second ejection port constructed and arranged to thrust approximately 45 degrees from the first ejection port, and a third ejection port to thrust approximately 45 degrees from the first ejection port.

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45. The munition system as claimed in claim 28, wherein each ejection port is substantively sealed with an explosive plug, wherein at least one plug is explosively opened to allow the extraction motor to thrust through the at least one ejection port and the at least one through-port.

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46. The munition system as claimed in claim 45, wherein the explosive plug includes a phototransistor explosive initiator constructed and designed to be actuated by a laser pulse.

47. The munition system as claimed in claim 28, wherein the delivery vehicle further  
20 comprises a delivery vehicle processor subsystem to determine errors due to wind.

48. The munition system as claimed in claim 28, wherein the delivery vehicle further includes a delivery vehicle sensor subsystem and a delivery vehicle processor subsystem to determine target position.

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49. The munition system as claimed in claim 48, wherein the delivery vehicle processor subsystem determines at least one ejection port to initiate to target at least one submunition to the determined target position.

50. The munition system as claimed in claim 28, wherein the delivery vehicle further includes a delivery vehicle sensor subsystem and a delivery vehicle processor subsystem to determine distinguishing characteristics of a target.

5 51. The munition system as claimed in claim 50, wherein the delivery vehicle processor subsystem discriminates between military and civilian targets.

52. The munition system as claimed in claim 28, wherein each submunition further includes at least one submunition sensor subsystem adapted to detect a military target.

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53. The munition system as claimed in claim 52, wherein the at least one submunition sensor subsystem communicates with a submunition processor subsystem to compare distinguishing target characteristics.

15 54. The munition system as claimed in claim 53, wherein the delivery vehicle further includes a delivery vehicle sensor subsystem and a delivery vehicle processor subsystem to determine distinguishing characteristics of a target, the delivery vehicle processor subsystem communicating the distinguishing characteristics of the target to the submunition sensor subsystem of the submunition before extraction of the submunition from the delivery  
20 vehicle.

55. The munition system as claimed in claim 28, wherein at least one combustion extraction motor is designed to eject a submunition at at least 100 feet per second lateral velocity from the delivery vehicle for a twelve pound submunition.

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56. The munition system as claimed in claim 28, wherein each submunition is removably attached to the delivery vehicle with a dovetail device.

57. The munition system as claimed in claim 56, wherein the dovetail device is designed  
30 to be sheered by the forces of the extraction motor.



58. The munition system as claimed in claim 57, wherein the dovetail device is a friction lock designed to release the submunition under the force of the extraction motor.

5 59. A method for deploying submunitions from a delivery vehicle, the method comprising the steps of:

- (a) extracting at least one submunition from the delivery vehicle by extraction means other than an extraction motor;
- (b) spinning the at least one submunition;
- 10 (c) initiating a submunition sensor subsystem;
- (d) acquiring a target; and
- (e) fuzing a weapon onboard the at least one submunition.

60. The method of claim 59, wherein the step of spinning the at least one submunition is  
15 effected by initiating a spin motor integral with the submunition.

61. The method of claim 59, further comprising the step of entering a target acquisition area.